REMARKS

In the Office Action, the Examiner noted that claims 1-22 are pending in the application and that claims 1-22 stand rejected. All claims continue unamended by this response.

In view of the following discussion, the Applicant respectfully submits that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. § 103. Thus, the Applicant believes that all of these claims are now in allowable form.

Rejections

A. 35 U.S.C. § 103

The Examiner rejected claims 1-2, 4-5, 11 and 22 under 35 U.S.C. § 103(a) as being unpatentable over Hamel et al. (U.S. Patent 5,943,148, hereinafter "Hamel") in view of Klinger et al. ("A 2.4 Gbit/s synchronous optical fiber transmission system", hereinafter "Klinger") and Sotom et al. (U.S. Patent 5,796,5 01, hereinafter "Sotom"). The rejection is respectfully traversed.

The Examiner alleges that regarding claim 1, Hamel discloses all of the aspects of the Applicant's invention except that Hamel does not expressly disclose that the tributary subsystems are configured to be coupled to pluralities of devices to enable the devices to communicate over the ring network and that multiplexing subsystems channel signals between the pluralities of devices and the ring network and that the module comprises an integral cross-connect module, and the determining is based on address information included in the received signals. The Examiner further concedes that Hamel does not teach, suggest or disclose, the first terminal node and the second terminal node communicate with each other only through the head-end node via respective communication channels. However, the Examiner alleges that it is well known and conventional in the art that the tributary subsystems of Hamel would be configured to be coupled to pluralities of devices to enable the devices to communicate over the ring network. The Examiner further alleges that Sotom teaches node communicate with each other only through the head-end node via respective communication channels. The Applicant respectfully disagrees.

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The Applicant agrees with the Examiner that Hamel fails to teach, suggest or disclose that the tributary subsystems are configured to be coupled to pluralities of devices to enable the devices to communicate over the ring network and that the first terminal node and the second terminal node communicate with each other only through the head-end node via respective communication channels as taught in the Applicant's specification and claimed by at least the Applicant's claim 1.

Furthermore, the Applicant submits that the teachings of Hamel, Klinger and Sotom, alone or in any allowable combination, fail to teach, suggest or disclose the invention of the Applicant at least with respect to independent claim 1, which specifically recites:

> "A system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network comprising:
>
> a first terminal node having a communication subsystem configured to be coupled to the ring network to receive and to transmit signals at a first wavelength and to permit signals at other wavelengths to pass, a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network, and a multiplexing subsystem coupled to the tributary subsystem and to the communication subsystem to channel signals between the plurality of devices and the ring network;
>
> a second terminal node having a communication subsystem configured to be coupled to the ring network to receive and to transmit signals at a second wavelength and to permit signals at other wavelengths to pass, a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network, and a multiplexing subsystem coupled to the tributary subsystem and to the communication subsystem to channel signals between the plurality of devices and the ring network; and
>
> a head-end coupled to the ring network to receive and to transmit signals at both the first and second wavelengths, the head-end node having a demultiplexer to isolate signals received at the first and second wavelengths, an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals, and a multiplexer to combine the received signals for transmission on the ring network at the first and second wavelengths;
>
> wherein said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels." (emphasis added).

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More specifically, in the invention of the Applicant, signals from the first terminal node are not processed by the second terminal node. In support of at least claim 1, the Applicant in the Specification specifically recites:

> "As discussed in more detail below, head-end and terminal nodes 24, 26 provide for coupling client system (not shown) to ring 22 for communication over virtual star network 20. Each terminal node 26 has a separate communication channel 28 over network 20 to head-end 25 but does not have a direct communication channel to any other terminal node 26. Each terminal node 26 sends all network traffic from its connected client systems to head-end node 24, which effects a cross-connection function and sends to each terminal node 26 the network traffic intended for it. Network 20 thus implements a virtual star over a physical ring, with head-end node 24 as the star's logical center, or hub, and terminal nodes 26 as the star's logical points." (See Specification, page 8, lines 15-23). (emphasis added).

In the Specification, the Applicant specifically recites one advantage of the configuration of the present invention:

> "Transition of a SONET/SDH ring 22 to a virtual star, switched architecture improves the cost-effectiveness and network capacity of an optical ring network. For example, with a conventional OC-48 ring, each node on the ring requires an OC-48 ADM. Each such ADM must be able to handle the full bandwidth of the ring and must be able to drop and to add tributaries into this high-speed channel. The aggregate bandwidth available to all nodes on the ring is about 2.5 Gbps, which must be shared among all nodes. It follows that the aggregate rate available to client systems coupled to each node is much else than the ring bandwidth; it is usually limited to about 622 Mbps (OC-12).
>
> An approach based on a switched, virtual star architecture according to the present invention, is as follows. The OC-48 ADM at each node is replaced by an OC-12 terminal multiplexer, provided with an optical sub-system as discussed below that provides the functionality of a terminal node 26 in the virtual star network. A head-end node 24 is provided to terminate all uplinks and downlinks to and from terminal nodes 26 to effect a SONET/SDH cross-connect function for the traffic from the terminals.
>
> Virtual star network 20 provides the functional behavior of an ADM-based OC-48 ring, but with added benefits. For example, because each terminal node 26 has available to it the full bandwidth for its wavelength, the aggregate rate available to each node in the virtual star is 622 Mbps (OC-12), regardless of the number of nodes in the network. For comparison, in an ADM-based OC-48 ring network of more than 8 nodes, the average capacity available to each node typically is less than 622 Mbps. Network transceiver hardware for terminal nodes 26 in virtual star network 20 is significantly less complex than that of an OC-48 ADM. This is due to the lower rates handled by terminal nodes 26 and the simpler functionality of a SONET terminal multiplexer as compared to an ADM.

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Less complexity results in lower cost and higher software and hardware reliability." (See Specification, page 9, lines 3-29)

As evident from at least the sections of the Applicant's specification presented above, the Applicant's invention is directed, at least in part, to a method and system implementing an inventive switched, virtual star network over a physical ring architecture wherein nodes only communicate with each other via a head end node and on separate communication channels (paths) such that each terminal node has available to it the full bandwidth for its operating bandwidth.

In contrast to the invention of the Applicant at least with respect to independent claim 1, there is absolutely no teaching, suggestion or description in Hamel for a switched, virtual star network (a system for communication) having at least a first terminal node and a second terminal node "wherein said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels" as taught in the Applicant's specification and claimed by at least the Applicant's claim 1. In contrast to the Applicant's invention, Hamel specifically recites:

> "In a ring network for which surveillance is desired in conformity with the invention, there is no electronic equipment on the optical fiber or fibers of this network (totally optical layer).
>
> However, since there is always one wavelength which is treated in each node of the network, in conformity with the invention an electrical frequency is superimposed on each wavelength, outside the transmission band." (See Hamel, col. 6, lines 30-37).

and

> "The superimposition referred to above makes it possible to create a superimposed transmission channel, at low speed, which acts as tracer for the associated wavelength and the wide band signal transmitted.
>
> Any damage to the network in the course of transmission will result in similar damage to the wide band signal and the tracer.
>
> This tracer is receive and analyzed at each node of the network and the information elaborated from this tracer is then routed in the transmission channel which is associated to the signal to be injected in each node.
>
> At each node, a surveillance circuit treats the information elaborated from the tracers which are sampled." (See Hamel, col 6, line 57 through col. 7, line 2).

and

> "At the input of each node N1 or N2, to which the wavelength .lambda.1 or .lambda.2 is assigned, the coupler C1 or C2 is a coupler of type 5/95 which allows the passage of 95% of the optical signals reaching it through the

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intermediary of the fiber F1 towards the multiplexer MO1 or MO2, and which samples 5% of these signals in order to use them in the corresponding surveillance circuit.

The converter COE1 or COE2 is a photodiode which converts the optical signals (5%) from the coupler C1 or C2 into electrical signals.

After this converter, there is an electrical signal which is constituted by the useful part of the information (towards the high frequencies) as well as the signaling part reserved for surveillance (towards the low frequencies).

The low-pass filter PB1 or PB2, placed behind the converter COE1 or COE2, is designed to eliminate the entire high-frequency part of the signal, which is useless for network surveillance.

The automatic gain control device CG1 or CG2 receives the signals thus filtered and makes it possible to send them to the two associated tonality sensors DF11, DF12 or DF21, DF22 with a constant voltage level, whatever the level of power at the input of the automatic gain control device.

Each tonality sensor is an integrated circuit which is pre-tuned on one of the two frequencies f1 and f2 and which makes it possible to know if there is, or not, an electrical signal at this frequency, at its output.

Sensors DF11 and DF21 are both pre-tuned on the frequency f1 whereas the sensors DF12 and DF22 are both pre-tuned on the frequency f2.

Each of the sensors DF1i and DF2i, which is pre-tuned on the frequency fi, where the index i takes the value 1 or 2, supplies in output a voltage Vsi which is:

at low level (0 V) if a signal at the frequency fi is present at its input, or
at high level (5 V) if there is not a signal at this frequency fi at its input.

This information concerning the presence or absence of frequency is transferred, by means of the corresponding control logic circuit CL1 or CL2, in a byte which is transmitted in the overhead of the signal sent to the network head T." (See Hamel, col. 9, lines 19-60).

It is clearly evident, at least from the portions of the disclosure of Hamel presented above, that in the invention of Hamel signals from a first node are communicated to and sampled by a second node to detect the presence or absence of a surveillance signal. This is in contrast to the invention of the Applicant at least with respect to claim 1, wherein "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels." As cited above, the Applicant, at least with respect to independent claim 1, specifically teaches that each terminal node has a separate communication channel over the network to the head-end but does not have a direct communication channel to any other terminal node. Further in contrast with the invention of the Applicant at least

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with regard to claim 1, in an alternate embodiment of the invention of Hamel, Hamel further specifically recites:

> "Studies currently being conducted in several telecommunications laboratories propose the introduction of wavelength multiplexing on ring architectures.
>
> In this connection, the following document may be consulted: A. Hamel et al., Multilayer add-drop multiplexers in a self-healing WDW ring network, OFC '95 Technical Digest.
>
> The solution which is usually proposed consists in assigning one wavelength per link between two nodes in order to ensure the exchange of the corresponding information on a physical ring support." (See Hamel, col. 3, lines 42-52). (emphasis added).

> "Each of the OADMs may be fixed or tunable (for example control voltage or electrical frequency) and several optical technologies may be used, for example multi-dielectric optical fibers or diffraction gratings or photo-inscribed Bragg gratings." (See Hamel, col. 4, lines 23-27)

In Hamel, the embodiment of FIG. 3 teaches a method of communication between a network head and four nodes. Hamel teaches that nodes communicate with each other by configuring information intended for a specific node with a wavelength received by the specific node and as such are capable of communicating directly with each other. As such, the invention of Hamel teaches away from the Applicant's invention. In contrast with Hamel, the Applicant specifically teaches and claims that nodes only communicate with each other through the head-end node. The purpose and advantages of the Applicant's configuration over Hamel was previously described. That is, each terminal node has available to it the full bandwidth for its operating bandwidth. This is not the case in the invention of Hamel or in FIG. 3 described in Hamel.

In addition, the Applicant respectfully submits that there is absolutely no suggestion or motivation to combine the teachings of Hamel, Klinger and Sotom. More specifically, for prior art reference to be combined to render obvious a subsequent invention under 35 U.S.C. § 103, there must be something in the prior art as a whole

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which suggests the desirability, and thus the obviousness, of making the combination. Uniroyal v. Rudkin-Wiley, 5 U.S.P.SQ.2d 1434, 1438 (Fed. Cir. 1988). **The teachings of the references can be combined only if there is some suggestion or incentive in the prior art to do so.** In re Fine, 5 U.S.P.SQ.2d 1596, 1599 (Fed. Cir. 1988). **Hindsight is strictly forbidden.** It is impermissible to use the claims as a framework to pick and choose among individual references to recreate the claimed invention Id. at 1600; W.L. Gore Associates, Inc., v. Garlock, Inc., 220 U.S.P.Q. 303, 312 (Fed. Cir. 1983).

Moreover, the mere fact that a prior art structure could be modified to produce the claimed invention would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984). Again, the Applicant strongly submits that there is absolutely no motivation or suggestion in either Hamel or Sotom for the combination of the references in an attempt to teach or make obvious the invention of the Applicant at least with regard to claim 1.

Even further, the Applicant strongly submits that even if a motivation or suggestion to combine the references did exist (which the Applicant strongly believes that no such motivation or suggestion exist), the teachings of Sotom and Klinger fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1, and the teachings and invention of Hamel. That is, the Applicant submits that any allowable combination of the references fails to teach, suggest or make obvious the invention of the Applicant, at least with respect to claim1 for a system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network wherein "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels". More specifically and as conceded by the Examiner, Hamel does not disclose that the first terminal node and the second terminal node communicate with each other only through the head-end node via respective communication channels. As such, the Examiner cites Sotom for teaching a network controller that receives messages and labels and forwards the messages on the receive wavelength of their destination node(s).

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However, the Examiner is not clear if he is citing Sotom for teaching that "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels" as taught in the Applicant's Specification and claimed by at least claim 1. Sotom absolutely does not teach, suggest or make obvious the teachings of the Applicant's invention for "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels." However, even if Sotom did teach that "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels" as taught in the Applicant's Specification and claimed by at least claim 1, combinating Sotom and Hamel makes it impossible for the invention of Hamel to perform its intended purpose. More specifically, in Hamel, a signal from a first node is sampled at a subsequent node to determine if a surveillance signal exists to accomplish the surveillance system of the invention of Hamel. As such, if the teachings of Sotom did in fact teach "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels" as taught in the Applicant's Specification and claimed by at least claim 1, the combination of Sotom and Hamel would destroy the intended purpose of the invention of Hamel. That is, in the invention of Hamel, it is necessary for each node to sample a signal from a preceding node to be able to determine if a surveillance signal exists. As such, the Applicant respectfully submits that Hamel specifically teaches away from the Applicant's invention at least for "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels" as taught in the Applicant's Specification and claimed by at least claim 1. Hamel specifically teaches that at least a portion of signal from each node must be communicated to any other nodes.

Furthermore, the Examiner cites Klinger for teaching the tributary systems of the Applicant's invention. However, the Applicant respectfully submits that the teachings of Klinger for a 2.4 Gigabit/s synchronous optical fiber transmission system also fails to teach, suggest or make obvious at least the Applicant's claim 1 for "said first terminal

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node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels."

Because Hamel, as conceded by the Examiner, does not teach, suggest or disclose a system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network wherein "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels" as taught by the Applicant and claimed by at least claim 1, and because Sotom and Klinger also fail to teach, suggest or make obvious a system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network wherein "said first terminal node and said second terminal node communicate with each other only through said head-end node via respective separate communication channels" the Applicant respectfully submits that Hamel, Sotom and Klinger, in any allowable combination also fail to teach, suggest or make obvious the Applicant's invention at least with respect to claim 1. However, the Applicant continues to maintain that the combination of the references is improper because on such motivation or suggestion to combine exists in any of the references.

Therefore, the Applicant submits that claim 1, as it now stands, fully satisfies the requirements of 35 U.S.C. §103 and is patentable thereunder.

Likewise, independent claim 22 recites similar relevant features as those recited in claim 1. As such and for at least the reasons stated herein, the Applicant respectfully submits that independent claim 22, as it now stands, also fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Furthermore, dependent claims 2, 4-5, and 11 depend directly from independent claim 1 and recite additional features thereof. As such, and for at least for the reasons recited above, the Applicant submits that these dependent claims are also not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

B. 35 U.S.C. § 103

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The Examiner rejected claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Hamel in view of Klinger and Sotom as applied to claim 1 above, and further in view of Jahromi (U.S. Patent No. 5,416,768). The rejection is respectfully traversed.

Claim 3 depends directly from independent claim 1 and recites further limitations thereof. The Examiner applied Hamel, Klinger and Sotom to claim 3 as described above for the Examiner's rejection of claim 1. The Examiner alleges that the differences between Hamel, Klinger and Sotom and claim 3 is that Hamel, Klinger and Sotom fail to teach that the head-end node includes a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network. As such the Examiner cites Jahromi for alleging the teaching of such a tributary subsystem. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger and Sotom, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1.

In addition, the teachings of Jahromi alone, for a digital cross-connection apparatus for use in interconnecting first and second communications networks (See Jahromi, Abstract), fail to teach, suggest or describe the Applicant's invention at least with regard to independent claim 1. Specifically, the teachings of Jahromi alone fail to teach a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels such that each terminal node has available to it the full bandwidth for its operating bandwidth as claimed by at least the Applicant's claim 1.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom or Jahromi for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Jahromi fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and the teachings and invention of Hamel, Klinger and Sotom. More specifically, the Jahromi fails to teach at least a method and communication system wherein terminal nodes communicate with each other only through a head-end

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node via respective separate communication channels as claimed by at least the Applicant's claim 1.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom and Jahromi, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom and Jahromi, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 as discussed above, the teachings of Hamel, Klinger, Sotom and Jahromi also do not teach, suggest, or describe the invention of the Applicant regarding dependent claim 3, which depends from independent claim 1, and do not render the Applicant's claim 3 obvious.

Therefore, the Applicant submits that claim 3 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

C. 35 U.S.C. § 103

The Examiner rejected claims 6-7 under 35 U.S.C. § 103(a) as being unpatentable over Hamel in view of Klinger and Sotom as applied to claim 5 above, and further in view of Armitage ("Design of a Survivable WDM Photonic Network"). The rejection is respectfully traversed.

Claims 6-7 depends directly from independent claim 5 and indirectly from claim 1 and recite further limitations thereof. The Examiner applied Hamel, Klinger and Sotom to claims 6-7 as described above for the Examiner's rejection of claim 5. The Examiner alleges that the differences between Hamel, Klinger and Sotom and claim 5 is that Hamel, Klinger and Sotom fail to teach that the communication protocol is IP or the communication protocol is ATM. As such the Examiner cites Armitage for alleging the teaching of such communication protocols. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger and Sotom, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 and claim 5.

In addition, the teachings of Armitage alone, for a WDM network, fail to teach, suggest or describe the Applicant's invention at least with regard to independent claim 1

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and claim 5. Specifically, the teachings of Armitage alone fail to teach a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels such that each terminal node has available to it the full bandwidth for its operating bandwidth as claimed by at least the Applicant's claim 1 and claim 5.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom or Armitage for the combination of the references to attempt to teach the invention of the Applicant at least with respect to claim 1 and claim 5.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Armitage fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and the teachings and invention of Hamel, Klinger and Sotom. More specifically, the Armitage fails to teach at least a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1 and claim 5.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom and Armitage, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and claim 5 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom and Armitage, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claim 5 as discussed above, the teachings of Hamel, Klinger, Sotom and Jahromi also do not teach, suggest, or describe the invention of the Applicant regarding dependent claims 6-7, which depend directly from claim 5 and indirectly from independent claim 1, and do not render the Applicant's claims 6-7 obvious.

Therefore, the Applicant submits that claims 6-7 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

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D. 35 U.S.C. § 103

The Examiner rejected claims 8, 17-19 and 21 under 35 U.S.C. § 103(a) as being unpatentable over Hamel in view of Klinger and Sotom and further in view of Armitage as applied to claims 6-7 above, and still further in view of Dumortier ("Toward a new IP over ATM routing paradigm"). The rejection is respectfully traversed.

CLAIM 8

Claim 8 depends directly from claim 5 and indirectly from independent claim 1 and recites further limitations thereof. The Examiner applied Hamel, Klinger, Sotom and Armitage to claim 8 as described above for the Examiner's rejection of claims 6-7. The Examiner alleges that the differences between Hamel, Klinger, Sotom and Armitage and claim 8 is that Hamel, Klinger, Sotom and Armitage fail to teach that the communication protocol is IP encapsulated within ATM. As such the Examiner cites Dumortier for alleging the teaching of such a communication protocol. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger, Sotom and Armitage, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 and claims 5-7. In addition, the teachings of Dumortier alone, for an IP over ATM routing paradigm (See Dumortier, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1 and claims 5-7 directed in part to a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1 and claims 5-7.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom, Armitage or Dumortier for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Dumortier fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and claims 5-7 and the teachings and invention of Hamel, Klinger,

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Sotom and Armitage. More specifically, Dumortier fails to teach at least a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels such that each terminal node has available to it the full bandwidth for its operating bandwidth s claimed by at least the Applicant's claim 1 and claims 5-7.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom, Armitage and Dumortier, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and claims 5-7 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom, Armitage and Dumortier, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claims 5-7 as discussed above, the Applicant submits that the teachings of Hamel, Klinger, Sotom, Armitage and Dumortier also do not teach, suggest, or describe the invention of the Applicant regarding dependent claim 8, which depends indirectly from independent claim 1 and directly from claim 5, and do not render the Applicant's claim 8 obvious.

Therefore, the Applicant submits that claim 8 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

CLAIMS 17-19 and 21

Regarding claims 17-19 and 21 the Examiner alleges that claims 17-19 and 21 correspond largely to coherent combinations of the limitations in system claims 1 and 5-8. As such, the Examiner alleges that because the teachings of Hamel in view of Klinger, Sotom and Armitage and further in view of Dumortier make obvious the claims 1 and 5-8, the teachings of Hamel in view of Klinger, Sotom and Armitage and further in view of Dumortier also make obvious the claims of 17-19 and 21. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger, Sotom and Armitage, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 and dependent claims 5-7. In addition, the teachings of Dumortier alone, for an IP over ATM routing paradigm (See Dumortier, Abstract), do not anticipate or render obvious the Applicant's invention at

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least with regard to independent claim 1 directed, at least in part, to a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels such that each terminal node has available to it the full bandwidth for its operating bandwidth and for a head-end node having a cross-connect module that determines an output wavelength at which to transmit received signals based on address information included in the received signals as claimed by at least the Applicant's claim 1 and further with regard to dependent claims 5-8.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom, Armitage or Dumortier for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Dumortier fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and dependent claims 5-8 and the teachings and invention of Hamel, Klinger, Sotom and Armitage at least as described above.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom, Armitage and Dumortier, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and dependent claims 5-8 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom, Armitage and Dumortier, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claims 5-8 as discussed above, the Applicant submits that the teachings of Hamel, Klinger, Sotom, Armitage and Dumortier also do not teach, suggest, or describe the invention of the Applicant regarding claims 17-19 and 21 which correspond largely to combinations of the limitations in system claims 1 and 5-8 as alleged by the Examiner.

Therefore, the Applicant submits that claims 17-19 and 21 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

E. 35 U.S.C. § 103

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The Examiner rejected claims 9-10 and 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Hamel in view of Klinger and Sotom as applied to claim 1 above, and further in view of Lea (U.S. Patent No. 6,115,373). The rejection is respectfully traversed.

CLAIMS 9-10

Claims 9-10 depend directly and indirectly from independent claim 1, respectively, and recite further limitations thereof. The Examiner applied Hamel, Armitage and Sharma to claims 9-10 as described above for the Examiner's rejection of claim 1. The Examiner alleges that the differences between Hamel, Klinger and Sotom and claims 9-10 is that Hamel, Klinger and Sotom fail to teach the second set of protocol-related limitations of claims 9-10. As such the Examiner cites Lea for alleging the teaching of such protocol-related limitations. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger and Sotom alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1. In addition, the teachings of Lea alone, for an information network architecture that can handle both ATM and IP traffic employing unbuffered switches employing a system of priority (See Lea, Abstract), do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 directed, at least in part, to a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom or Lea for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Lea fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and the teachings and invention of Hamel, Klinger and Sotom. More specifically, Lea fails to teach or suggest at least a method and communication system wherein terminal nodes communicate with each other only through a head-end

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node via respective separate communication channels as claimed by at least the Applicant's claim 1.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom and Lea, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom and Lea, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 as discussed above, the Applicant submits that the teachings of Hamel, Klinger, Sotom and Lea also do not teach, suggest, or describe the invention of the Applicant regarding dependent claims 9-10, which depend either directly or indirectly from independent claim 1, and do not render the Applicant's claims 9-10 obvious.

Therefore, the Applicant submits that claims 9-10 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

CLAIMS 17-20

Regarding claims 17-20 the Examiner alleges that claims 17-20 correspond largely to coherent combinations of the limitations in system claims 1 and 9-10. As such, the Examiner alleges that because the teachings of Hamel in view of Klinger and Sotom and further in view of Lea make obvious the claims 1 and 9-10, the teachings of Hamel in view of Klinger and Sotom and further in view of Lea also make obvious the claims of 17-20. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger and Sotom, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 and dependent claims 9-10. In addition, the teachings of Lea alone, for an information network architecture that can handle both ATM and IP traffic employing unbuffered switches employing a system of priority (See Lea, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1 directed, at least in part, to a method and communication system wherein terminal nodes communicate with each other only through a head-end

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node via respective separate communication channels as claimed by at least the Applicant's claim 1 and further with regard to dependent claims 9-10.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom or Lea for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Lea fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and dependent claims 9-10 and the teachings and invention of Hamel, Klinger and Sotom at least as described above.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom and Lea, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and dependent claims 9-10 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom and Lea, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claims 9-10 as discussed above, the Applicant submits that the teachings of Hamel, Klinger, Sotom and Lea also do not teach, suggest, or describe the invention of the Applicant regarding claims 17-20 which correspond largely to combinations of the limitations in system claims 1 and 9-10 as alleged by the Examiner.

Therefore, the Applicant submits that claims 17-20 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

F. 35 U.S.C. § 103

The Examiner rejected claims 12-13 under 35 U.S.C. § 103(a) as being unpatentable over Hamel in view of Klinger and Sotom as applied to claim 1 above, and further in view of Elrefaie ("Multiwavelength Survivable Ring Network Architecture"). The rejection is respectfully traversed.

Claims 12-13 depend either directly or indirectly from independent claim 1 and recite further limitations thereof. The Examiner applied Hamel, Klinger and Sotom to claims 12-13 as described above for the Examiner's rejection of claim 1. The Examiner

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alleges that the differences between Hamel, Klinger and Sotom and claims 12-13 is that Hamel, Klinger and Sotom fail to teach that the multiplexer comprising a pair of multiplexers coupled to the first and second rings, respectively. As such the Examiner cites Elrefaie for alleging the teaching of such a pair of multiplexers. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger and Sotom, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1. In addition, the teachings of Elrefaie alone, for a new architecture for implementing unidirectional and bi-directional self-healing interoffice ring networks using WDM technology for growth (See Elrefaie, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1 directed, at least in part, to a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom or Elrefaie for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Elrefaie fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and the teachings and invention of Hamel, Klinger and Sotom. More specifically, Elrefaie fails to teach or suggest at least a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom and Elrefaie, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom and Elrefaie, alone or in any allowable combination, do not teach, suggest, or describe the invention

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of the Applicant regarding at least claim 1 as discussed above, the Applicant submits that the teachings of Hamel, Klinger, Sotom and Elrefaie also do not teach, suggest, or describe the invention of the Applicant regarding dependent claims 12-13, which depend from independent claim 1, and do not render the Applicant's claims 12-13 obvious.

Therefore, the Applicant submits that claims 12-13 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

G. 35 U.S.C. § 103

The Examiner rejected claims 14-16 under 35 U.S.C. § 103(a) as being unpatentable over Hamel in view of Klinger and Sotom as applied to claim 1 above, and further in view of Elrefaie as applied to claim 12 above, and still further in view of Wu et al.. The rejection is respectfully traversed.

CLAIM 14

Claim 14 depends indirectly from independent claim 1 and directly from dependent claim 12 and recites further limitations thereof. The Examiner applied Hamel, Klinger, Sotom and Elrefaie to claim 14 as described above for the Examiner's rejection of claim 12. The Examiner alleges that the differences between Hamel, Klinger, Sotom and Elrefaie and claim 14 is that Hamel, Klinger, Sotom and Elrefaie fail to teach that the head-end node further includes a selector that compares a pair of signals received by the pair of demultiplexers and selects a signal from the pair of signals based on a quality parameter of each signal. As such the Examiner cites Wu for alleging the teaching of such a selector. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger, Sotom and Elrefaie, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 or dependent claim 12. In addition, the teachings of Wu alone, for using a SONET SHR architecture in future survivable interoffice fiber networks (See Wu, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1 directed, at least in part, to a method and communication system wherein terminal nodes communicate with

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each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom, Elrefaie or Wu for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Wu fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and dependent claim 12 and the teachings and invention of Hamel, Klinger, Sotom and Elrefaie. More specifically, Wu fails to teach or suggest at least a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom, Elrefaie and Wu, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 or dependent claim 12 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom, Elrefaie and Wu, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claim 12 as discussed above, the Applicant submits that the teachings of Hamel, Klinger, Sotom, Elrefaie and Wu also do not teach, suggest, or describe the invention of the Applicant regarding dependent claim 14, which depends directly from claim 12 and indirectly from independent claim 1, and do not render the Applicant's claim 14 obvious.

Therefore, the Applicant submits that claim 14 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

CLAIMS 15-16

Regarding claims 15-16 the Examiner alleges that claims 15-16 correspond largely to coherent combinations of the limitations in system claims 1 and 12-14. As such, the Examiner alleges that because the teachings of Hamel in view of Klinger and

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Sotom and in view of Elrefaie and further in view of Wu make obvious the claims 1 and 12-14, the teachings of Hamel in view of Klinger and Sotom and in view of Elrefaie and further in view of Wu also make obvious the claims of 15-16. The Applicant respectfully disagrees.

As described above, the teachings of Hamel, Klinger, Sotom, and Elrefaie alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 and dependent claims 12-14. In addition, the teachings of Wu alone, for using a SONET SHR architecture in future survivable interoffice fiber networks (See Wu, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1 directed, at least in part, to a method and communication system wherein terminal nodes communicate with each other only through a head-end node via respective separate communication channels as claimed by at least the Applicant's claim 1 and further with regard to dependent claims 12-14.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Hamel, Klinger, Sotom, Elrefaie or Wu for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Wu fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and dependent claims 12-14 and the teachings and invention of Hamel, Klinger, Sotom and Elrefaie at least as described above.

As such the Applicant submits that the teachings of Hamel, Klinger, Sotom, Elrefaie and Wu, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and dependent claims 12-14 obvious.

Therefore, at least because the teachings of Hamel, Klinger, Sotom, Elrefaie and Wu, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claims 12-14 as discussed above, the Applicant submits that the teachings of Hamel, Klinger, Sotom, Elrefaie and Wu also do not teach, suggest, or describe the invention of the Applicant regarding

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claims 15-16 which correspond largely to combinations of the limitations in system claims 1 and 12-14 as alleged by the Examiner.

Therefore, the Applicant submits that claims 15-16 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

Conclusion

Thus, the Applicant submits that none of the claims presently in the application are obvious under the provisions of 35 U.S.C. § 103. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If the Examiner believes that there are any unresolved issues requiring adverse action in any of the claims now pending in the application, it is requested that the Examiner telephone Jorge Tony Villabon, Esq. at (732) 530-9404 x 1131 or Eamon J. Wall, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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